

West Virginia Vectorborne Disease Surveillance Report

JANUARY 1 – SEPTEMBER 1, 2016

The purpose of this report is to share descriptive surveillance data related to vectorborne disease activity with public health partners in West Virginia (WV). All information in this report is considered provisional. For questions or comments, contact Miguella Mark-Carew in the Division of Infectious Disease Epidemiology (DIDE) at miguella.p.mark-carew@wv.gov.



MOSQUITOES

HUMAN SURVEILLANCE

During the period of January 1 to September 1, 2016, a total of 14 human cases of mosquito-borne disease were reported: eleven travel-associated Zika virus disease cases, two La Crosse encephalitis cases, and one travel-associated malaria case (Table 1).

Table 1. Summary of human cases of mosquito-borne diseases for the current reporting period in WV.

Mosquito-borne Disease	# Confirmed and Probable Human Cases ^a Total through September 1, 2016	Comments
Zika virus disease	11	All cases were travel-associated
Malaria	1	Case traveled to Cameroon
La Crosse encephalitis	2	Reported from Kanawha and Nicholas
Total	14	

^aTable includes only confirmed and probable cases that have been reviewed and closed by the Zoonotic Disease Epidemiologist.

BIRD AND HORSE SURVEILLANCE

During the period of January 1 to September 1, 2016, the Office of Laboratory Services received 6 birds for arboviral disease testing. Three birds were unsatisfactory for testing. One bird was negative for arboviral disease; test results for the other dead bird are pending.

Table 2. Summary of dead birds and horses (serum) specimens submitted for testing through September 1, 2016.

Type of Specimen	Total through September 1, 2016				Comments
	# Specimens Tested	+ Arbovirus ^a			
		WNV	SLE	EEE	
Dead bird	3	0	0	0	One specimen was negative; two pending
Horse serum	1	0	0	0	Horse was negative for arboviral diseases
Total	4	-	-	-	

^aNote: horse specimens are tested for WNV and EEE only.

MOSQUITO SURVEILLANCE

During the period of May 24 to August 23, 2016, 57 locations in the following 17 counties have served as mosquito surveillance sites: Berkeley, Braxton, Cabell, Fayette, Greenbrier, Harrison, Jackson, Jefferson, Kanawha, Mercer, Morgan, Nicholas, Ohio, Raleigh, Roane, Wetzel, and Wood (Fig. 1). The first and only sign of West Nile virus activity in West Virginia this year was detected in a single sample of adult *Culex* mosquitoes (mixed sample containing *Culex pipiens* and *Culex restuans*) collected in Cabell County on July 6 (Fig. 1, Table 3). Since latter half of July, there has been an increase in Asian tiger mosquito (*Aedes albopictus*) adult activity in West Virginia. Adult *Aedes albopictus* has been active near human population centers. Figure 2 shows the geographic distribution of *Aedes albopictus* in West Virginia. This mosquito species—known to be a vector of dengue, chikungunya, and Zika—has been identified in eleven West Virginia counties this year.

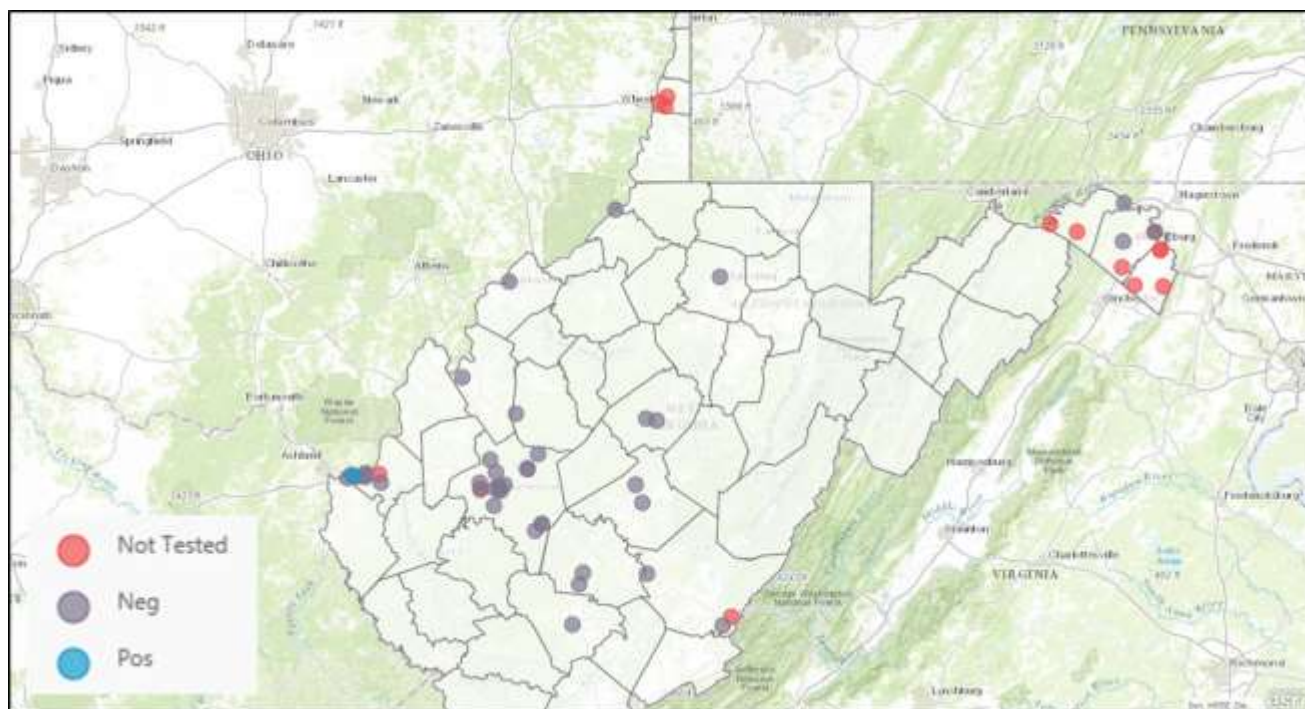


Figure 1. Active mosquito surveillance sites through August 23, 2016. Pools have been collected, identified, and prepared for arboviral disease testing from 15 counties. One West Nile virus positive pool was detected in Cabell County in early July.

Table 3. Testing summary of adult mosquito pools through August 6, 2016.

Mosquito Species	Total through September 1, 2016					Comments
	# Pools Tested	+ Arbovirus-positive pools				
		WNV	LAC	SLE	EEE	
<i>Culex</i> spp.	176	1	-	-	-	WNV positive <i>Culex</i> pool in Cabell County
Non- <i>Culex</i> spp.	64	-	-	-	-	
Total	240	-	-	-	-	

WNV=West Nile virus; LAC=La Crosse; SLE=St. Louis encephalitis; EEE=Eastern equine encephalitis

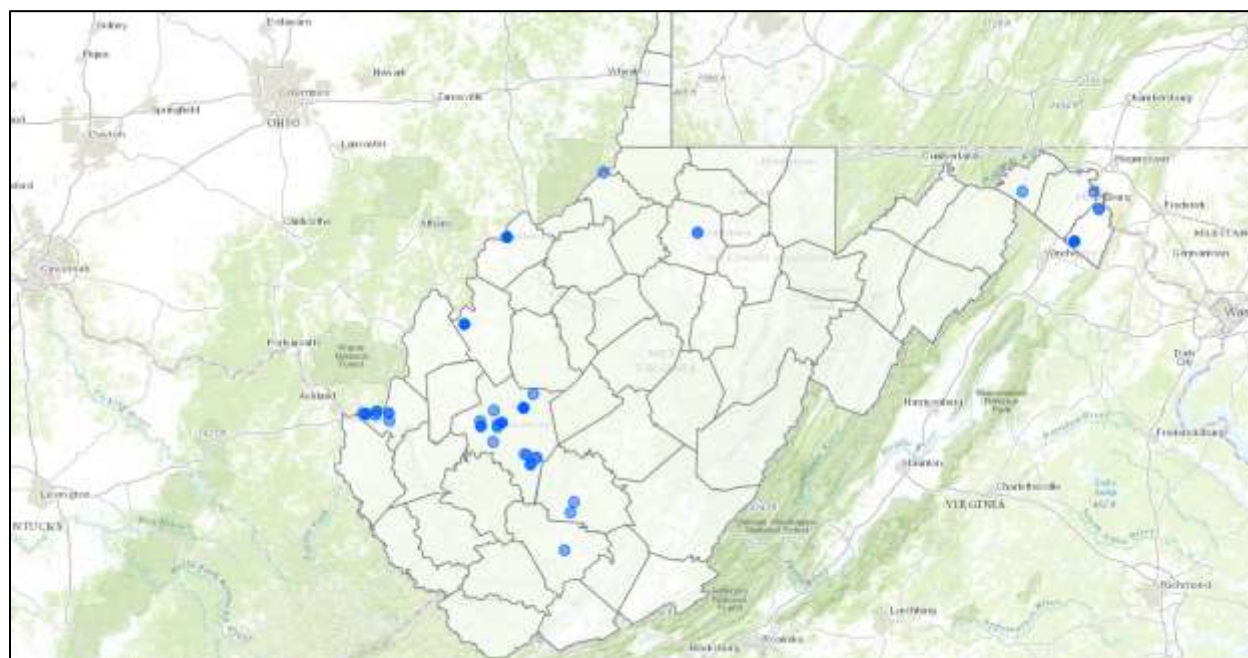


Figure 1. Distribution of *Aedes albopictus* identified through mosquito surveillance. It has been identified in 11 counties: Berkeley, Cabell, Fayette, Harrison, Jackson, Jefferson, Kanawha, Morgan, Raleigh, Wetzel, and Wood.

TICKS

HUMAN SURVEILLANCE

Through September 1, 2016, 213 confirmed and probable cases of tickborne diseases (TBDs) were reported in West Virginia. The majority of cases (93.9%) were Lyme disease cases (n=200) (Figure 2) and were reported from endemic counties in the eastern part of the state. Spotted fever group rickettsioses (SFGRs) (n=7), ehrlichiosis (n=5) and Q fever (n=1) cases were also reported (Table 4). Thirty-four (70.9%) of West Virginia's 55 counties have reported human tickborne disease activity.

Table 4. Summary of reported human cases of tickborne diseases (TBDs) through September 1, 2016.

Tickborne Disease ^a	# Confirmed or Probable Cases through September 1, 2016	# of Counties Where Disease Reported
Ehrlichiosis	5	4
Lyme disease	200	38
Spotted fever group rickettsioses ^b	7	6
Q fever	1	1
TOTAL	213	39 counties reported TBD

^aTable includes only confirmed or probable cases that have been reviewed and closed by Zoonotic Disease Epidemiologist.

^bIncludes Rocky Mountain spotted fever

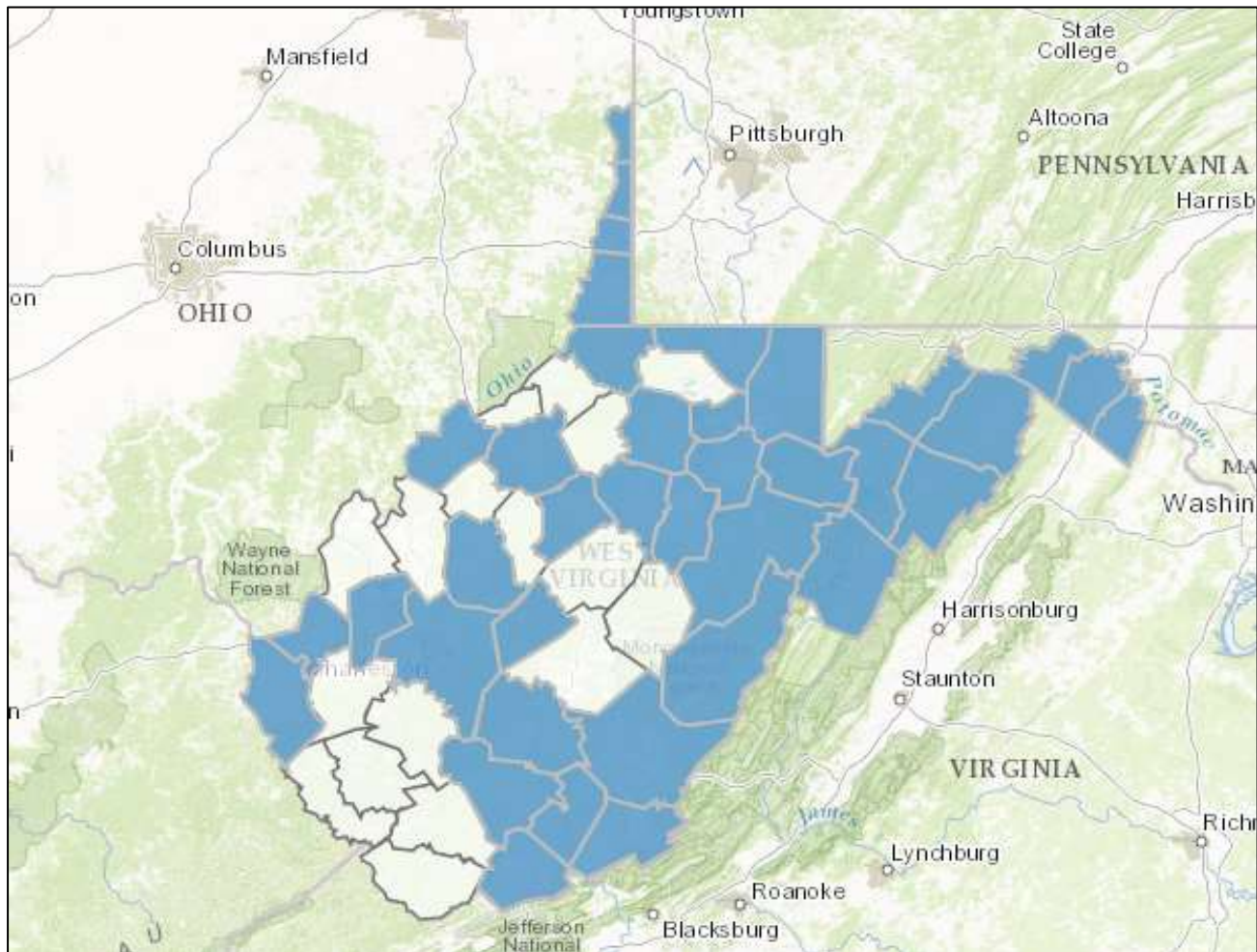


Figure 2. County distribution of confirmed and probable Lyme disease cases (N=200) through September 1, 2016, West Virginia. Counties with at least one reported Lyme disease case are shown in blue.

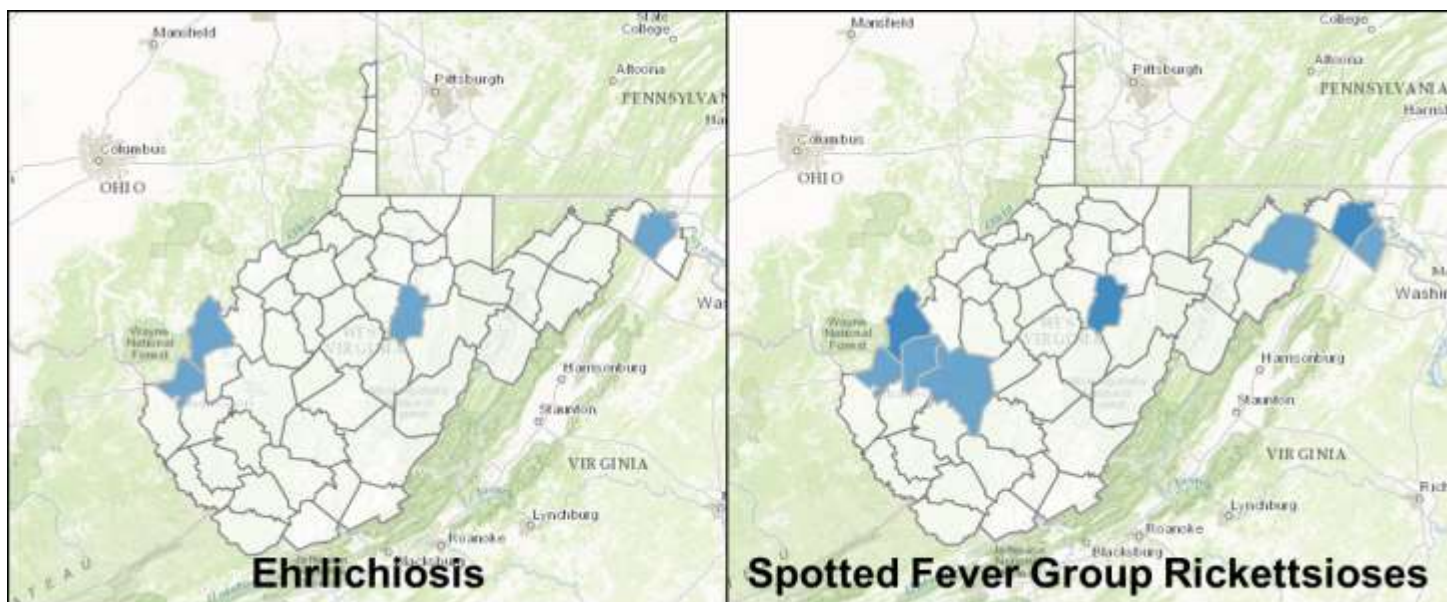


Figure 3. County distribution of ehrlichiosis (n=5) and SFGRs (n=7) cases through September 1, 2016, West Virginia. SFGRs cases were reported in Berkeley, Hampshire, Jefferson, Kanawha, Mason, Putnam, and Upshur counties; ehrlichiosis cases were reported in Berkeley, Cabell, Mason, and Upshur counties.

VETERINARY TICK SURVEILLANCE

Veterinarians from 40 veterinarians practices have submitted 996 ticks from animals for identification through August 17, 2016 (based on date of collection) (Table 5). Ticks have been active in every month, including winter months of January and February. Seven species have been identified: *Amblyomma americanum*, *Amblyomma maculatum*, *Dermacentor variabilis*, *Haemaphysalis leporispalustris*, *Ixodes cookei*, *Ixodes scapularis*, and *Rhipicephalus sanguineus*. The majority of ticks identified were *D. variabilis* (70.5%).

Table 5. West Virginia Veterinary Tick Surveillance Project tick identification results through August 17, 2016.

Tick Species	# of Ticks Submitted and Identified
<i>A. americanum</i>	50
<i>A. maculatum</i>	1
<i>D. variabilis</i>	708
<i>H. leporispalustris</i>	2
<i>I. cookei</i>	25
<i>I. scapularis</i>	100
<i>Ixodes spp.</i>	28
<i>R. sanguineus</i>	90
Total	1,004

Ticks ID results by veterinary practice and tick distribution results by county can be viewed at: <http://arcg.is/1V3Ob5A> or on the West Virginia Veterinary Tick Submission Project page at: <http://www.dhhr.wv.gov/oeps/disease/zoonosis/tick/pages/wv-veterinary-tick-submission-project.aspx>.

Thank you to all of the public health stakeholders who have contributed to the data analyzed in this report.

CUMULATIVE HUMAN VECTORBORNE DISEASE SURVEILLANCE SUMMARY, WEST VIRGINIA (January 1– September 1, 2016)

County	MOSQUITO-BORNE					TICKBORNE					
	LAC	WNV	CHIK	DF	Malaria	Anaplasmosis	Ehrlichiosis	Lyme disease	RMSF	Q fever	Tularemia
Barbour								3			
Berkeley							1	31	1		
Boone											
Braxton											
Brooke								4			
Cabell							1	1			
Calhoun											
Clay								2			
Doddridge											
Fayette								1			
Gilmer								1			
Grant								1			
Greenbrier								2			
Hampshire								23	1		
Hancock								15			
Hardy								3			
Harrison								4			
Jackson											
Jefferson								15	1		
Kanawha	1							8	1		
Lewis								2			
Lincoln											
Logan											
McDowell											
Marion											
Marshall								1			
Mason					1		2		1		
Mercer								2			
Mineral								14			
Mingo											
Monongalia								4			
Monroe								8			
Morgan								11			
Nicholas	1										
Ohio								4			
Pendleton								2			
Pleasants											
Pocahontas								1			
Preston								4			
Putnam								1	1		
Raleigh								4			
Randolph								1			
Ritchie								4			
Roane								2			
Summers								2			
Taylor								2			
Tucker											
Tyler											
Upshur							1	3	1		
Wayne								1			
Webster											
Wetzel								5			
Wirt										1	
Wood								10			
Wyoming											
TOTAL	2	0	0	0	1	0	5	200	7	1	0

*Table includes only confirmed or probable cases that have been reviewed and closed by the Zoonotic Disease Epidemiologist.
Zika virus disease cases will not be identified at the county level.

LAC = La Crosse encephalitis WNV= West Nile virus

CHIK= chikungunya

DF= dengue fever

RMSF= Spotted fever group rickettsioses including Rocky Mountain spotted fever